HPV vaccine acceptance in male adolescents

Prue, G., & Santin, O. (2015). HPV vaccine acceptance in male adolescents. *Psycho-oncology*, *24*(10), 1327-1329. https://doi.org/10.1002/pon.3961

Published in:
Psycho-oncology

Document Version:
Peer reviewed version

Clinical correspondence

HPV vaccine acceptance in adolescent males

Gillian Prue, Olinda Santin

School of Nursing and Midwifery, Queen's University Belfast, Medical Biology Centre, 97 Lisburn Road, Belfast, BT9 7BL, UK

Corresponding Author:

Gillian Prue, PhD
Room 06.315
School of Nursing and Midwifery
Queen's University of Belfast
Medical Biology Centre
97 Lisburn Road
Belfast
BT9 7BL

g.prue@qub.ac.uk
+4428 9097 2345

Key points:

- HPV impacts on the health of both sexes; vaccination is most effective when given prior to sexual contact.
- Adolescent males appear to have limited knowledge of HPV and the HPV vaccine.
- Research into vaccine acceptance is complicated due to the lack of definition and validated measurement tools.
- More prospective longitudinal research is needed in order to develop effective intervention strategies.
- The Precaution Adoption Process Model may be beneficial to guide research into vaccine acceptance.

Human papillomavirus (HPV) is one of the most common sexually transmitted infections worldwide [1]. It is so common that nearly all sexually active men and women will be exposed to it at some point in their lives. HPV can be passed from one person to another even when there are no visible signs and symptoms. Most people are able to clear the infection themselves with no lasting harm, but for some the virus persists and can lead to a number of health problems. HPV infection is well-recognised as a causative agent in cervical cancer, but it is also associated with other anogenital tumours, oropharyngeal cancers, and genital warts, meaning that it also has serious health consequences in males and females [2]. Despite HPV's impact on the health of both sexes, only the United States (US), Australia, Austria, Israel, and two Canadian provinces currently recommend a gender neutral vaccination. Switzerland has recently made a recommendation that the vaccine should be 'gender neutral' and is currently considering offering the vaccine to both sexes. Despite this, there is substantial debate around the inclusion of males in HPV vaccination programmes. Many European countries do not include men, and focus on achieving a high coverage in females to promote herd protection, i.e. a reduction in the risk of infection in males due to reduced exposure as a result of female vaccination. There is some emerging evidence that this is the case, an analysis of female only vaccination programmes in nine countries with high female vaccination rates found a reduction in the number of boys with genital warts of around one third [3]. The incremental benefit of extending the vaccine to males is indeed highly dependent on coverage in females. With a low uptake in girls, the benefit of vaccinating boys is easily demonstrated. With a more than 70% uptake in females, the gender neutral vaccine appears less cost effective, however, a European study assessing the benefit of male vaccination in all carcinomas that have an established causal link with HPV demonstrated that the vaccination of 12 year old boys and girls would be associated with substantial additional clinical benefits in terms of reduced incidence of HPV-related genital warts and carcinomas versus a girls only vaccination [4], this additional benefit was noted even with a high vaccine uptake.

A female only vaccination strategy does however leave a number of men vulnerable to HPV infection, particularly men who have sex with other men (MSM), and men who have sex with unvaccinated females. A proposed solution could be to offer the vaccine to MSM at a sexual health clinic; however, for the HPV vaccine to be most effective it should be given in adolescence, before exposure to HPV through sexual contact. Data on immunogenicity in males demonstrated that seroconversion and antibody titers are higher in males aged 9-15 years than males aged 16-26 [5]. Most MSM are likely to have had multiple sexual partners with

increased risk of HPV acquisition before they attend a sexual health clinic [6]. It is our opinion that the most practical and ethical solution to the problem is to offer HPV vaccination to both adolescent males and females.

It is therefore imperative to understand the knowledge, awareness and attitudes of adolescent boys to HPV and HPV vaccination to ensure uptake is maximised and both boys and girls are protected against HPV-related cancers in the future. This is vital given that, for example, in the US, where a gender neutral vaccine is offered, there is evidence to suggest that vaccine uptake in adolescent males is low; in 2012 only 20.8% boys aged 13 – 17 received at least one dose, with only 6.8% receiving the full three dose schedule [7].

In the past five years there has been a proliferation of studies examining knowledge and awareness of HPV in adolescent boys (which is likely reflective of changes in various policies to recommend a gender neutral vaccine strategy). The majority of studies have been cross-sectional and conducted in the US, UK, Australia and Canada, but other European, Asian and African countries have also examined the issue and it would appear that currently adolescent boys' knowledge and awareness of HPV is low [8].

Policy and Practice recommendations

Insufficient knowledge of HPV in adolescent boys may be reflective of many countries' information campaigns being targeted to females only with a clear focus on cervical cancer. What may be needed is better health education and public information to maximise public awareness that HPV affects both men and women and should be the concern of both sexes.

Although knowledge it low, it is important to note that knowledge is not always predictive of vaccine acceptance and uptake. In China, despite HPV knowledge being poor, a large majority of females were accepting of vaccination [9]. There is therefore an opportunity for education to extend beyond vaccination to transmission and other prevention measures. As knowledge and acceptance are not always correlated, i.e. an adolescent may consider vaccination without adequate knowledge, health care professionals responsible for vaccination should use the opportunity to inform adolescents about HPV and its associated cancers.

Countries with school based programmes such as the UK have achieved high female vaccination rates, and may also achieve high male rates if a gender neutral vaccination was

introduced. In the absence of such a programme, it can be challenging to achieve high rates and to ensure all doses are received in a timely manner. The US, for example, may never achieve high female or male vaccination rates. It is even more imperative therefore to accurately understand vaccine acceptance to order to improve uptake.

Research recommendations

The cross-sectional nature of the bulk of the research to date makes it difficult to determine if vaccine acceptance or intent to vaccinate leads to actual vaccine uptake. Prospective longitudinal studies would be more informative providing data on factors that influenced the move from vaccine intention to uptake.

Few studies on vaccine acceptance in adolescent boys are guided by a theoretical framework around decision making or behaviour change; this makes the identification and exploration of factors that influence vaccine uptake difficult. This is vital if we are to determine how to increase vaccine acceptance and uptake. A theoretical framework such as the Precaution Adoption Process Model (PAPM), a model of behaviour change with six stages of decision-making [10], may be beneficial for work of this nature. The PAPM categorises individuals as 1) unaware 2) unengaged, 3) undecided 4) decided not to act 5) decided to act 6) acting. This model applied in a longitudinal survey would allow for the crucial identification of factors that caused the change in health behaviour. The PAPM is suited to research in vaccine acceptance and uptake as it identifies those who are aware of the vaccine but decided not to act. The categorisation of individuals who have decided to act and those individuals who have acted (i.e. received the vaccine) allows the crucial identification of factors that lead individuals to receive the vaccine. It is likely that a different intervention would be needed for individuals at different stages of the PAPM. For example, someone is stage 1 (unaware) would benefit most from awareness raising interventions in the media or from health care professionals; someone who has decided to act needs assistance in accessing the vaccine.

Research in the area is further complicated as there is currently no definition of vaccine acceptance, and no universally accepted tool for its measurement. This makes comparison of studies problematic as the outcome of interest is measured in various ways, making it difficult to draw conclusions and recommendations and to develop methods to enhance vaccine acceptance.

Policy makers are under increasing pressure in the UK, and other countries to consider the merit of a gender neutral vaccination. This correspondence does not aim to provide a scientific opinion on whether to implement the vaccine or not. It does however highlight the importance of understanding vaccine acceptance in adolescent boys to enhance the uptake of vaccines in this population group, should a decision to implement a gender neutral vaccine be reached or have already been made.

References

1. Forman D, de Marrel C, Lacey C. Global burden of human papillomavirus and related diseases. Vaccine 2012;30:F12-F23.
2. Liddon N, Hood J, Wynn BA, Markowitz LE. Acceptability of Human Papillomavirus vaccine for males: a review of the literature. Journal of Adolescent Health 2010;46:113-123.
3. Drolet M, Benard E, Boily M-C, Ali H, Baandrup L, Bauer H, et al. Population level impact and herd effects following human papillomavirus vaccination programmes: a systematic review and meta-analysis. The Lancet Infectious Diseases 2015;15:565-580.
4. Marty R, Roze S, Bresse X, Largeron N, Smith-Palmer J. Estimating the clinical benefits of vaccinating boys and girls against HPV-related diseases in Europe. BMC Cancer 2013;13:10.
5. Food and Drug Administration. Highlights of prescribing information. Gardasil (human papillomavirus quadrivalent [types 6, 11, 16 and 18]). Silver Spring, MD: Food and Drug Administration; 2011. Available at http://www.fda.gov/downloads/biologicsbloodvaccines/vaccines/approvedproducts/ucm111263.pdf
6. Zou H, Tabrizi S, Grulich A, Garland S, Hocking J, Bradshaw C et al. Early acquisition of anogenital human papillomavirus among teenage men who have sex with men. The Journal of Infectious Diseases 2014; 209: 642-651.
7. National Cancer Institute. Accelerating HPV Vaccine Uptake: Urgency for Action to Prevent Cancer. A Report to the President of the United States from the President's Cancer Panel. Bethesda, MD: National Cancer Institute; 2014. http://deainfo.nci.nih.gov/advisory/pcp/annualReports/HPV/index.htm
8. Holman DM, Benard V, Roland KB, Watson M, Liddon N, Stokley S. Barriers to Human Papillomavirus vaccination among US adolescents. JAMA Pediatr 2014;168:76-82.
9. Li J, Li L-K, Ma J-F, Wei L-H, Niyazi M, Li C-Q et al. Knowledge and attitudes about human papillomavirus and HPV vaccines among women living in metropolitan and rural regions of China. Vaccine 2009; 27:1210-1215.
10. Weinstein N. The precaution adoption process. Health Psychology 1988;7:355-386.